higher LVEF (63 ± 10-vs-54 ± 10%). SEC and MR frequency and severity were similar in both groups. Multivariate regression analysis identified LVEF, LV D and LA V as correlates of LAA PE (multiple r = 0.88, p = 0.002) in older but not younger pts. *Conclusion:* Compared with younger pts, older pts with NVAF have significantly lower LAA velocities despite higher LVEF, smaller LV size, and similar LA volumes. This finding may explain the previously reported increased frequency of embolic events in older pts with NVAF.

### 951-133 Large Artery Stiffness and Beta Adrenergic Relaxation In Aged Rats

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To determine the effect of age on arterial wall stiffness and to elucidate possible mechanisms in the NIA recommended aging breed, BNxF344, pressure-radius curves (P-r) and isoproterenol dose response were measured in carotid arteries of 6 month and 23 month old rats. P-r were measured at baseline to determine the in vivo active stiffness, after stimulation of the $\alpha$-adrenergic receptor (AR) with $10^{-7}$M norepinephrine to determine the active stiffness, and after $Ca^{2+}$-depletion to determine the passive stiffness. In addition, $\beta$-AR response to isoproterenol was obtained in the presence and absence of the endothelium. Lumen diameter, media thickness, and smooth muscle area were increased by 28%, 36% and 19%, respectively, in 23 month compared to 6 month old rats. Both in-vivo active and passive stiffness, measured from the slopes of the stress-strain curves, were augmented with age. Isoproterenol-induced relaxation was diminished with age. We concluded that in the BNxF344 model, arterial passive stiffness was increased with age. This increase was not explained by elevated media thickness because the passive stress-strain curves were shifted to the left in the 23 month compared to the 6 month old rats. Therefore, this increase in stiffness may be due to intrinsic alterations in smooth muscle cells and/or extracellular matrix. In addition, the increase in the in vivo active stiffness with age may be due to diminished $\beta$-AR stimulated vasorelaxation.

MONDAY POSTER

## 952 Adult Cardiothoracic Surgery I

Monday, March 17, 1997, 3:00 p.m.–5:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: 4:00 p.m.–5:00 p.m.

### 952-122 Prognostic Value of Resting Left Ventricular Ejection Fraction Early Following Successful Coronary Artery Bypass Surgery

A.F. Jacobson, D. Lapsley, D.E. Tow, S. Khuri. *VA Medical Centers, Seattle, WA, USA, West Roxbury, MA, USA*

The prognostic value of resting left ventricular ejection fraction (LVEF) early following successful coronary artery bypass graft (CABG) surgery (no 30-day mortality) was examined in 356 consecutive patients (pts) (353 male) (mean age 58.6) who had: Surgery between 1982–1985; pre- (mean 7.0 days) and post-CABG (mean 8.6 days) first-pass radionuclide ventriculographic LVEF (LVEF1 and LVEF2); post-surgical follow-up. Ten-year survival (TS) was determined from Kaplan-Meier curves and examined as a function of LVEF1 and LVEF2 (represented as LVEF2 = 1 in table) among all pts, and in the subgroups with improvement in LVEF2 (LVEF2-LVEF1 ≥5%) ($\Delta$i) ($n$ = 187) or no improvement ($\Delta$n) (n = 169).

During follow-up, 117 pts (30%) died; mean follow-up among survivors was 11.1 yr. TS probabilities were as follows:

| LVEF1 (%) | <30 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | ≥60 |
|---|---|---|---|---|---|---|---|---|
| # pts→ | 11 | 27 | 55 | 47 | 76 | 73 | 45 | 22 |
| TS: All | 0.18 | 0.50 | 0.58 | 0.65 | 0.75 | 0.69 | 0.82 | 0.86 |
| $\Delta$i | 0.14 | 0.61 | 0.65 | 0.69 | 0.78 | 0.74 | 0.83 | 0.75 |
| $\Delta$n | 0.25 | 0.34 | 0.50 | 0.61 | 0.71 | 0.64 | 0.81 | 0.89 |
| LVEF2 = 1 | 0.18 | 0.34 | 0.50 | 0.60 | 0.67 | 0.72 | 0.80 | 0.80 |

For LVEF1 of 30–54%, TS was consistently higher for $\Delta$i than $\Delta$n ($p < 0.05$ for the entire range and for LVEF1 of 30–39%). Conversely, for abnormal LVEF values (<50%), TS for LVEF2 groups tended to be lower than for pts with comparable LVEF1 results (LVEF2 = 1 vs All data in table).

In pts with moderately impaired LVEF pre-CABG, early post-CABG LVEF stratifies pts for long-term survival prognosis, with those who show improved LVEF having a statistically significant survival advantage.

### 952-123 Post-Infarction Large Akinetic Scar: Benefits of Endoventricular Patch Plasty Repair in Patients with Severe Left Ventricular Dysfunction

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Large anterior myocardial infarction leaves either akinetic (S) or dyskinetic (D) scar. The latter is known to have a more favorable outcome than S, when surgically treated. The study addresses 40 patients (61 ± 9 years) with S and compares to 49 patients (60 ± 8 years) with D, both with asynergy involving ≥60% of LV perimeter (centerline method) and preoperative EF ≤ 30%, who underwent endoventricular circular patch plasty repair and coronary grafting. They were comparable for clinical variables. In both groups, 85% had heart failure as major indication for surgery and was in NYHA class III/IV.

| | Patients with S | | 2Patients with D | |
|---|---|---|---|---|
| | Preop | Postop | Preop | Postop |
| EF (%) | 23 ± 4 | 38 ± 11# | 23 ± 6 | 42 ± 10# |
| EDVI (m1/m2) | 248 ± 79* | 107 ± 47#* | 211 ± 79 | 89 ± 30# |
| CWP (mmHg) | 20 ± 9* | 12 ± 7# | 16 ± 7 | 12 ± 56# |

*p < 0.05 vs D; # vs basal

Mortality rate was 10.4% in S and 17% in D (ns). Results show that patients with S had worse preoperative hemodynamics; nevertheless, they had the same improvement in function than D. The reduction of wall tension and $O_2$ demand due to reduction of volumes and the increase in $O_2$ supply due to revascularization play the major role in improving pump function. Thus, patients with end-stage ischemic cardiomyopathy benefit from a surgical technique previously reserved only for dyskinetic aneurysm.

### 952-124 Improvement of Coronary Blood Flow and Function in Hibernating Myocardium Immediately After Coronary Artery Bypass Grafting

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The link between coronary blood flow (CBF) and recovery of myocardial function in hibernating myocardium soon after coronary revascularization is unknown. To gain further insight into the perfusion-contraction matching in dysfunctioning viable myocardium, we studied 10 patients (9 men, 1 woman, aged 54 to 73 years) undergoing coronary artery bypass grafting (CABG) of the left anterior descending coronary artery (LAD) with hibernation in the LAD-related segments. Myocardial viability in the LAD territory was observed in all patients by either dobutamine stress echocardiography (69% of the 45 dyssynergies) or quantitative Thallium-201 rest-redistribution (89%) criteria. CBF by great cardiac vein thermodilution technique and regional wall motion by transesophageal echocardiography were assessed simultaneously in the LAD territory before CABG and 20 minutes after weaning from cardiopulmonary bypass, following stabilization of hemodynamic variables. Regional function improved immediately after CABG in 75% of the dyssynergies (wall motion score index from 2.7 ± 0.7 to 1.6 ± 1.1, $p < 0.01$). No hyperkinesis of the pre-CABG normally contracting segments was observed. CBF from the LAD territory increased in all patients after surgery (from 57 ± 30 to 125 ± 56 ml/min, $p < 0.01$). At follow-up, 75.5% of the dysfunctioning segments had function normalized or improved.

These results suggest that in hibernating myocardium baseline CBF is chronically reduced and that improvement of perfusion following revascularization is associated with an immediate functional recovery of the hypoperfused-dependent myocardium.

### 952-125 Preoperative Pulmonary Factors as Independent Predictors of Patient Outcome After Coronary Bypass

C.C. Canver, R.D. Nichols, S.D. Cooler. *The University of Wisconsin School of Medicine, Madison, WI, USA*

Respiratory complications after a successful coronary bypass influence the length of a patient's recovery. To determine the effects of preoperative pulmonary factors on the length of intensive care unit (ICU)/hospital stay and late survival after coronary artery bypass grafting (CABG), a retrospective study was performed on 793 veteran patients (613 patients <70 years, 180 patients ≥70 years) undergoing CABG (1987 to 1995).